



## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2021-0515; Project Identifier AD-2021-00191-E; Amendment 39-21739; AD 2021-20-01]**

**RIN 2120-AA64**

#### **Airworthiness Directives; Pratt & Whitney Turbofan Engines**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for all Pratt & Whitney PW1500G and PW1900G series turbofan engines with a certain high-pressure turbine (HPT) 1st-stage hub or HPT rotor 1st-stage blade retaining plate installed. This AD was prompted by a report from the manufacturer who determined that the HPT 1st-stage hub and HPT rotor 1st-stage blade retaining plate fail to meet the published life-cycle limits for each part. This AD requires removal and replacement of the HPT 1st-stage hub and HPT rotor 1st-stage blade retaining plate prior to reaching certain cycle limits. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** For service information identified in this final rule, contact Pratt & Whitney, 400 Main Street, East Hartford, CT 06118; phone: (800) 565-0140; fax: (860) 565-5442; email: [help24@prattwhitney.com](mailto:help24@prattwhitney.com); website: <https://fleetcare.prattwhitney.com>. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (781) 238-7759. It is also available at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0515.

## **Examining the AD Docket**

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0515; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Mark Taylor, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7229; fax: (781) 238-7199; email: [Mark.Taylor@faa.gov](mailto:Mark.Taylor@faa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **Background**

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to all Pratt & Whitney PW1500G and PW1900G series turbofan engines with a certain HPT 1st-stage hub or HPT rotor 1st-stage blade retaining plate installed. The NPRM published in the *Federal Register* on June 29, 2021 (86 FR 34166). The NPRM was prompted by a report from the manufacturer who determined that the HPT 1st-stage hub and HPT rotor 1st-stage blade retaining plate fail to meet the published life-cycle limits for each part. In the NPRM, the FAA proposed to require removal and replacement of the HPT 1st-stage hub and HPT rotor 1st-stage blade retaining plate prior to reaching certain cycle limits. The FAA is issuing this AD to address the unsafe condition on these products.

### **Discussion of Final Airworthiness Directive**

#### **Comments**

The FAA received comments from two commenters. The commenters were Delta Air Lines, Inc. (DAL) and the Air Line Pilots Association, International (ALPA). The following presents the comments received on the NPRM and the FAA's response to each comment.

## **Request to Correct Required Actions**

DAL requested that the FAA change paragraph (g)(1)(ii) of this AD from removing the affected part and replacing with a part eligible for installation “at the next engine shop visit after accumulating 4,700 CSN...” to “at the next engine shop visit after accumulating 4,960 CSN...” to mirror the 4,960 CSN listed earlier in the paragraph. DAL suggested that “4,700 CSN” is a typographical error.

The FAA disagrees that “4,700 CSN” is a typographical error. It is the cyclic value at which point certain HPT parts are to be removed from service. In contrast, “4,960 CSN on the effective date of this AD” is a calculated point at which HPT-part removal requirements transition from the requirements of paragraph (g)(1)(ii) of this AD to the requirements of paragraph (g)(1)(iii) of this AD. “4,960 CSN” and “4,700 CSN” are different in their function and how they are calculated. The FAA did not change this AD.

## **Support for the AD**

ALPA expressed support for the NPRM as written.

## **Conclusion**

The FAA reviewed the relevant data, considered any comments received, and determined that air safety requires adopting this AD as proposed. Accordingly, the FAA is issuing this AD to address the unsafe condition on these products. This AD is adopted as proposed in the NPRM.

## **Related Service Information**

The FAA reviewed Pratt & Whitney Service Bulletin (SB) PW1000G-A-72-00-0115-00B-930A-D, Issue No. 001, dated April 26, 2021, and Pratt & Whitney SB PW1000G-A-72-00-0168-00A-930A-D, Issue No. 001, dated April 26, 2021. These SBs describe procedures for removing and replacing the HPT 1st-stage hub and HPT rotor 1st-stage blade retaining plate.

## **Costs of Compliance**

The FAA estimates that this AD affects 88 engines installed on airplanes of U.S. registry. The FAA estimates that in most cases the affected HPT 1st-stage hub and the affected HPT 1st-stage blade retaining plate will both be replaced during the same

disassembly of the engine. This cost estimate therefore reflects the cost of replacing both parts during the same engine disassembly.

The FAA estimates the following costs to comply with this AD:

#### **Estimated costs**

<b>Action</b>	<b>Labor Cost</b>	<b>Parts Cost</b>	<b>Cost per product</b>	<b>Cost on U.S. operators</b>
Replace HPT 1st-stage hub and HPT rotor 1st-stage blade retaining plate (pro-rated part cost)	300 work-hours x \$85 per hour = \$25,500	\$86,252	\$111,752	\$9,834,176

#### **Authority for this Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

#### **Regulatory Findings**

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and

(3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

#### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

#### **The Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

#### **PART 39 - AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

**2021-20-01 Pratt & Whitney:** Amendment 39-21739; Docket No. FAA-2021-0515; Project Identifier AD-2021-00191-E.

#### **(a) Effective Date**

This airworthiness directive (AD) is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

#### **(b) Affected ADs**

None.

#### **(c) Applicability**

This AD applies to Pratt & Whitney PW1519G, PW1521G, PW1521G-3, PW1521GA, PW1524G, PW1524G-3, PW1525G, PW1525G-3, PW1919G, PW1921G, PW1922G, PW1923G, and PW1923G-A model turbofan engines with a high-pressure turbine (HPT) 1st-stage hub, part number (P/N) 30G5701, or an HPT rotor 1st-stage blade retaining plate, P/N 30G1692, installed.

#### **(d) Subject**

Joint Aircraft System Component (JASC) Code 7250, Turbine Section.

#### **(e) Unsafe Condition**

This AD was prompted by a report from the manufacturer who determined that the HPT 1st-stage hub and HPT rotor 1st-stage blade retaining plate fail to meet the

published life-cycle limits for each part. The FAA is issuing this AD to prevent failure of the HPT 1st-stage hub or HPT rotor 1st-stage blade retaining plate. The unsafe condition, if not addressed, could result in the release of the HPT 1st-stage hub or HPT rotor 1st-stage blade retaining plate, damage to the engine, and damage to the aircraft.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Required Actions**

(1) For PW1519G, PW1521G, PW1521G-3, PW1521GA, PW1524G, and PW1524G-3 model turbofan engines:

(i) For an affected HPT 1st-stage hub and an affected HPT rotor 1st-stage blade retaining plate with 3,000 cycles since new (CSN) or fewer on the effective date of this AD, before the affected part exceeds 4,700 CSN, remove the affected part, as applicable, and replace with a part eligible for installation.

(ii) For an affected HPT 1st-stage hub and an affected HPT rotor 1st-stage blade retaining plate with greater than 3,000 CSN but fewer than 4,960 CSN on the effective date of the AD, at the next engine shop visit after accumulating 4,700 CSN or before the affected part exceeds 5,260 CSN, whichever occurs first, remove the affected part, as applicable, and replace with a part eligible for installation.

(iii) For an affected HPT 1st-stage hub and an affected HPT rotor 1st-stage blade retaining plate with 4,960 CSN or greater on the effective date of the AD, at the next engine shop visit or within 300 cycles after the effective date of this AD, whichever occurs first, remove the affected part, as applicable, and replace with a part eligible for installation.

(2) For PW1919G and PW1921G model turbofan engines:

(i) For an affected HPT 1st-stage hub and an affected HPT rotor 1st-stage blade retaining plate with 3,000 CSN or fewer on the effective date of this AD, before the affected part exceeds 4,700 CSN, remove the affected part, as applicable, and replace with a part eligible for installation.

(ii) For an affected HPT 1st-stage hub and an affected HPT rotor 1st-stage blade retaining plate with greater than 3,000 CSN but fewer than 4,700 CSN on the effective

date of the AD, at the next engine shop visit after the affected part accumulates 4,700 CSN or before the affected part exceeds 5,000 CSN, whichever occurs first, remove the affected part, as applicable, and replace with a part eligible for installation.

(iii) For an affected HPT 1st-stage hub and an affected HPT rotor 1st-stage blade retaining plate with 4,700 CSN or greater on the effective date of the AD, at the next engine shop visit or within 300 cycles after the effective date of this AD, whichever occurs first, remove the affected part, as applicable, and replace with a part eligible for installation.

(3) For PW1525G and PW1525G-3 model turbofan engines:

(i) Before the affected HPT 1st-stage hub and affected HPT rotor 1st-stage blade retaining plate exceeds 2,800 CSN, respectively, or within 300 cycles after the effective date of this AD, whichever occurs later, remove the affected part, as applicable, and replace with a part eligible for installation.

(ii) [Reserved]

(4) For PW1922G, PW1923G, and PW1923G-A model turbofan engines:

(i) Before the affected HPT 1st-stage hub and affected HPT rotor 1st-stage blade retaining plate exceeds 3,000 CSN, respectively, or within 300 cycles after the effective date of this AD, whichever occurs later, remove the affected part, as applicable, and replace with a part eligible for installation.

(ii) [Reserved]

## **(h) Definitions**

(1) For the purpose of this AD, an “engine shop visit” is the induction of an engine into the shop for maintenance involving the separation of pairs of major mating engine case flanges, except for the following, which do not constitute an engine shop visit:

(i) Separation of engine flanges solely for the purposes of transportation without subsequent maintenance does not constitute an engine shop visit.

(ii) Separation of engine flanges solely for the purpose of replacing the fan without subsequent maintenance does not constitute an engine shop visit.

(2) For the purpose of this AD, a “part eligible for installation” is:

(i) For PW1519G, PW1521G, PW1521G-3, PW1521GA, PW1524G, PW1524G-3, PW1919G, and PW1921G model turbofan engines:

(A) Any HPT 1st-stage hub with P/N 30G5701 with 4,700 CSN or fewer, or with a P/N not listed in this AD.

(B) Any HPT rotor 1st-stage blade retaining plate with P/N 30G1692 with 4,700 CSN or fewer, or with a P/N not listed in this AD.

(ii) For PW1525G and PW1525G-3 model turbofan engines:

(A) Any HPT 1st-stage hub with P/N 30G5701 with 2,800 CSN or fewer, or with a P/N not listed in this AD.

(B) Any HPT rotor 1st-stage blade retaining plate with P/N 30G1692 with 2,800 CSN or fewer, or with a P/N not listed in this AD.

(iii) For PW1922G, PW1923G, and PW1923G-A model turbofan engines:

(A) Any HPT 1st-stage hub with P/N 30G5701 with 3,000 CSN or fewer, or with a P/N not listed in this AD.

(B) Any HPT rotor 1st-stage blade retaining plate with P/N 30G1692 with 3,000 CSN or fewer, or with a P/N not listed in this AD.

**(i) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (j) of this AD. You may email your request to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

**(j) Related Information**

For more information about this AD, contact Mark Taylor, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7229; fax: (781) 238-7199; email: Mark.Taylor@faa.gov.



**(k) Material Incorporated by Reference**

None.

Issued on September 14, 2021.

Lance T. Gant, Director,  
Compliance & Airworthiness Division,  
Aircraft Certification Service.

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